REMARKS

This application has been carefully reviewed in light of the Office Action dated April 10, 2006. Claims 4, 5 and 24 to 28 are pending in the application, of which Claims 24, 26, 27 and 28 are independent. Reconsideration and further examination are respectfully requested.

Claims 1, 4 to 6, 11 and 12 were rejected under 35 U.S.C. § 112, first paragraph, for allegedly containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Specifically, on page 5 of the Detailed Action, the Examiner alleges that the specification discloses using a ratio of grid distances rather than grid distances for processing. Furthermore, Claims 1, 4 to 6, 11 and 12 were also rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, on page 8 of the Detailed Action, the Examiner states that "weight values" are not clearly defined in the claims. Without conceding the correctness of these rejections, Applicant submits that the preceding amendments to the claims clarify the features of the claims including references to weight values. Furthermore, the amended claims no longer feature ratios. Accordingly, Applicants respectfully requests withdrawal of these rejections.

Claims 1, 3 to 6, 11 and 12 were rejected under 35 U.S.C. § 103 over U.S. Patent No. 5,883,821 (Komaki) in view of U.S. Patent No. 5,644,509 (Schwartz). Reconsideration and withdrawal of this rejection is respectfully requested.

The present invention concerns selecting a tetrahedron used in the tetrahedral interpolation from a three-dimensional look-up table having non-uniform intervals by using a relationship among weight values (u', v', w'). When the three-dimensional look-up table has the

non-uniform intervals, the proper tetrahedron cannot be selected by simply comparing three components (x, y, z) as input data, because there is the possibility that the interval is different in X, Y, and Z. Therefore, the present invention features using the weight values (u', v', w') divided by the interval (X1-X0), (Y1-Y0) and (Z1-Z0) to select the tetrahedron and to calculate the output data value P. That is, the present invention efficiently uses the weight values.

Turning to specific claim language, amended independent Claim 24 is directed to a method of converting three-dimensional input data representing an image by using a three-dimensional look-up table having rectangularly spaced grid points, grid positions of the three-dimensional look-up table having non-uniform intervals. The method includes the step of performing interpolation processing using four grid points in eight grid points (P000 = P(X0, Y0, Z0), P001 = P(X0, Y0, Z1), P010 = (X0, Y1, Z0), P011 = P(X0, Y1, Z1), P100 = P(X1, Y0, Z0), P101 = P(X1, Y0, Z1), P110 = P(X1, Y1, Z0), P111 = P(X1, Y1, Z1)) of a unit rectangular hexahedron which includes an input data value (X, Y, Z where $X0 \leq X \leq X1$, $Y0 \leq Y \leq Y1$, $Z0 \leq Z \leq Z1$). The interpolation processing includes the steps of: obtaining weight values (u', v', w'), based on the input data value (X, Y, Z), wherein the weight values are expressed as follows:

$$u' = INT(((X-X0)/(X1-X0))L),$$

$$v' = INT(((Y-Y0)/(Y1-Y0))L),$$

$$w' = INT(((Z-Z0)/(Z1-Z0))L),$$

where a value of a predetermined constant (L) is greater than each of the grid intervals (X1-X0, Y1-Y0, Z1-Z0) of the three-dimensional look-up table, and is a power of 2; determining a relationship among the weight values (u', v', w'); and calculating an output data value (P) for the input data value by tetrahedral interpolation using the output values for the four grid points and the weight values, based on determining result by the following equations:

when u'>v'>w', P=((L-u')P000+(u'-v')P100+(v'-w')P110+w'P111)/L,

when u'>w'=v', P=((L-u')P000+(u'-w')P100+(w'-v')P110+v'P111)/L,

when w'=u'>v', P=((L-w')P000+(w'-u')P001+(u'-v')P101+v'P111)/L,

when w'=v'=u', P=((L-w')P000+(w'-v')P001+(v'-u')P011+u'P111)/L,

when v'>w'=u', P=((L-v')P000+(v'-w')P010+(w'-u')P011+u'P111)/L,

when v'=u'>w', P=((L-v')P000+(v'-u')P010+(u'-w')P110+w'P111)/L.

The Examiner's attention is respectfully directed to Fig. 9 and its related description where support for the amended claims may be found.

In contrast, Komaki discloses equations for interpolation that are different from the equations for the tetrahedral interpolation of the present invention. Furthermore, Schwartz discloses a look-up table having non-uniform intervals as shown in Fig. 6, and the intervals of grid positions spread out as leaving an white point 60. However, Schwartz does not disclose a structure to efficiently perform the interpolation on the look-up table having non-uniform intervals as in the present invention.

Therefore, Komaki and Schwartz, either alone or in combination, do not disclose or suggest all of the features of Claim 24. Accordingly, Applicant submits that Claim 24 is now in condition for allowance.

Independent Claims 26, 27 and 28 directed to an apparatus, a computer readable medium and a computer program stored on a computer readable medium, respectively, substantially in accordance with the method of Claim 24. Accordingly, Applicant submits that Claims 26, 27 and 28 are also now in condition for allowance and respectfully requests same.

In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

Applicant's undersigned attorney may be reached in our Costa Mesa, CA office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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